

9-1997

Livestock Industry Facilities and Environment: Swine Cooling Methods—Evaporative Pads

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Recommended Citation

Harmon, Jay D., "Livestock Industry Facilities and Environment: Swine Cooling Methods—Evaporative Pads" (1997). *Agriculture and Environment Extension Publications*. 169.

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Swine Cooling Methods- *Evaporative Pads*¹



Livestock
Industry
Facilities &
Environment

Description: Evaporative pads are porous pads that are mounted on the sidewall of a building, wet with water, either by running water down it from the top or by spraying water on it with nozzles, and then air is drawn through the pad. This process, called evaporative cooling, uses heat in the air to evaporate water, thereby reducing the air temperature but increasing the humidity.

Probable Uses:

- Finishing Pigs
- Gestation and Breeding Barns
- Farrowing Barns

Advantages:

- Effectively cools at low humidities
- Works well with tunnel ventilation

Disadvantages:

- All inlet air must enter through evaporative pads
- Relatively expensive
- Area around the pad is sometimes wet during operation
- During winter air will leak in around the mounted pad
- Specialized maintenance of pad required
- During humid weather may make the environment worse

Design Information

Evaporative pads are generally installed on the end of a building. If the building is longer than 200 feet long pads are placed on both ends or in the middle. The system is designed much like the tunnel ventilation system except air speed is reduced. Most systems operate at an air exchange rate 40 percent less than a normal tunnel building.

Farrowing houses can be cooled by mounting an evaporative pad on a common hallway that feeds air to several rooms. Care should be taken to avoid increasing the static pressure to the point that air flow through the room will be inhibited.

The pad is sized to optimize the evaporation and static pressure loss across the pad. In most cases, the pad area will be between 3 and 5 square feet per 1000 cfm drawn through the system.

Set the wetting of the pad to begin at 78 F. Allow the pad to dry before switching off the air flow. This will dry the pad and prolong its life.

¹ By Jay D. Harmon, Ph.D., PE., Extension Agricultural Engineer, Iowa State University.

Further Information:

For further information see “Heating, Cooling and Tempering Air for Livestock Housing”, MWPS-34. This 47 page handbook is available for \$6 plus handling from county Extension offices or by calling 1-800-562-3618.